

## RACE MIXTURE<sup>1</sup>

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To most people the concept of race or race mixture has a more or less strong emotional connotation. Most people are also inclined to consider the group to which they belong as particularly outstanding from a cultural or some other special point of view. It is only natural that through such assessments of value, which sometimes are made subconsciously, the possibility of judging these problems rationally is lost. In addition, most of the traits usually emphasized as characteristic of a racial group lack either biologic significance or objective meaning.

In common, and unfortunately very often also in scientific language, the word «race» is used with a number of different meanings. To be able to discuss race mixture it is therefore necessary to explain the modern concept of race in terms of population genetics.

To understand a number of common misunderstandings it should also be remembered that modern genetics dates back only to the year 1900, and that the influence of genetics on physical anthropology is a quite recent feature. Previously it had been the common understanding that inheritance depended on parental propensities mixed in such a way that the offspring was regarded as some kind of an alloy. Such concepts as "half-blood" and "quarteron" are linguistic relics from this period. *Charles Darwin* also understood the mechanism of inheritance in this way but fortunately did not develop further the consequences of this theory in connection with his own theory of evolution. If inheritance meant a blending, it would follow that genetic variation would decrease fifty per cent per generation. This would imply that any population in a short time would become genetically homogeneous. Selection would be without any effect as far as the offspring was concerned, and further evolution according to *Darwin's* theory would be impossible.

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The idea of pure races is also based on this superceded concept of the mechanism of inheritance. As mentioned above, it was not until quite recently that the classic, more descriptive physical anthropology started to use a more dynamic approach in which genetics takes an essential part. The lack of any more scientific approach made it possible to distribute all kinds of nonsense about race and race mixture under the pretence of science as pointed out by *Dahlberg* [1942]. There are numerous examples which could be cited to demonstrate how the concept of race has been utilized for nationalistic, imperialistic and a number of other political purposes and mostly with disastrous consequences.

Therefore, some anthropologists and geneticists regard the very word "race" so disqualified that it should not be used. One suggestion is to talk about ethnic groups. However, this hardly seems to be a rational solution as the race concept is already well established in such biologic sciences as zoology and botany.

When discussing races and race mixture, it is not sufficient to consider only a cross section of the world population at a given moment. It is also important to consider the evolution of human populations. Up to about the middle of the 15th century the population of the earth consisted of relatively strongly isolated groups. There had, of course, been transmigrations of people, conquests and settlements in new localities, but in comparison with later developments these early migrations were rather insignificant and, above all, they did not imply new contacts between people with quite different characteristics.

Early geographic isolation, prevalent for many thousands of years, caused a differentiation between population groups. Each of these groups reached a certain degree of adaptation to their special environment. This process was explained by *Darwin* as coming about through selection. The adequate explanation of the mechanism of evolution, however, was not produced until *Mendel's* discoveries became known and appreciated. The most fundamental concept in *Mendel's* discovery is the fact that inheritance is particular. Sexual propagation, therefore, does not mean a blending but a recombination of the particles of heredity, i.e. the genes. Sexual propagation does not destroy but conserves the genetic variation. Therefore, selection can—just as *Darwin* thought—cause changes in the genetic structure of a population via environmental influences on genetically determined traits.

The key to the modern race concept lies in this evolutionary and dynamic view. Races are populations which, mainly because of geographic isolation, share a common gene pool. Naturally, the geographic isolation between the populations of the earth has never been complete. There have always been borders where mixtures and gene exchanges have occurred. Therefore, the differences between neighbouring populations are always smaller than between those far apart. How great a difference should be to be called a race difference is more or less a matter of statistic consideration. Difficulties in distinguishing between races are an unavoidable consequence of the proceeding evolution.

Insofar as geographically widely separated populations are concerned, selection and adaptation have caused such pronounced genetic and phenotypic differences that the distinction of separate races does not raise any difficulties. In this discussion of race mixture it is primarily crossings between individuals of just such widely separated populations which will be considered. Generally one does not talk about race mixture when neighbouring populations are concerned.

Due to the earlier very restricted individual mobility there were no real problems of race mixture until the middle of the 15th century, at any rate, not of the magnitude that has occurred later. A quite new era began when the great exploring expeditions took people, above all the Europeans, to remote countries and continents. Thus a basis was created for race mixtures of the tremendous proportions that are so typical of our time.

To give some idea of the magnitude of population movements during the last five hundred years it could be mentioned that about 3 million Spaniards migrated to South America from 1450 to 1600. From 1820 to 1935 about 35 millions—mainly Europeans—migrated to the American continent. From the beginning of the 16th century to about 1850 at least 15 millions Negroes—mainly West Africans—were transferred to North and South America. Well known is also the expansion of the Asiatic population, especially the Chinese and the Japanese, to the islands of the Pacific and to the USA.

All these migrations together with the European colonization immediately caused race mixture on a large scale. Thus the foundations of large mixed populations were laid down in many parts of the world. It is not possible to give a satisfactory estimate of how many individuals of mixed origin there are in the world today. However, it is justifiable to venture a guess of close to 50 million. This figure is

probably on the minimum side. Race mixture, therefore, is a problem that certainly has more than academic interest.

*Social aspects.*

It is, in fact, the social consequences of mixed marriages that have made race mixture a problem of modern times. If race mixture had been accepted as a natural phenomenon everywhere, the offspring of such marriages would eventually be assimilated in the population, which thereby, of course, would undergo a certain biologic change. Such a process is no doubt going on in all populations in which there is race mixture, but it occurs with quite a different speed in different countries. The social resistance to mixed marriages may vary a great deal. In certain countries, e.g., Paraguay and Mexico, race mixture has been accepted without any restrictions. In most other places, however, the resistance has been very hard. The reasons are very complex, and it will only be possible to mention a few main points.

Race consciousness and nationalism are more or less characteristic for all peoples. In this there are always such components as ideas of superiority to other peoples. Such ideas have always reached larger dimensions the more physically and culturally different these other peoples have been. Peoples with a more advanced technical culture have always tended to consider techniques as the only important criterion. Technical underdevelopment has been interpreted as a symptom of cultural backwardness in general.

These ideas bring us over the role played by imperialism and colonization in race discrimination. The myth of the superiority of the White man or the White race was invented to further colonization enterprises and to serve political and economical purposes. For a few Whites in a colony it was necessary to create a wall between the ruling and the ruled class. Race mixture would only create complications which could be disastrous for the existence of the White race. In countries of a less pronounced colonial character, e.g., the USA or South Africa, this sharp distinction could not always be upheld.

Instead, a typical cast society developed. Race mixture took considerable proportions, but the offspring of this mixture met social difficulties and were expelled to the group which according to the opinion of the Whites was the lower one, i.e. the coloured population. In other instances, e.g., race mixture between Chinese and Europeans, the offspring found themselves expelled from both parental groups and were forced to create a cast of their own.

It is only too evident that behind this social discrimination against race mixture lies nothing but egotism, ignorance and superstition.

#### *Biologic aspects.*

Among the biologic arguments which are currently raised against race mixture, the most common ones are founded on ignorance of the evolution of man. A common misunderstanding is that the different human races could be arranged according to their degree of evolution as originating from a common primitive stock. So-called primitive races are considered to entertain a lower cultural level, which is supposed to depend on inferior intelligence and inferior moral qualifications. Finally, many seem to accept flatly the idea that such mental traits are to a very high degree genetically determined. Consequently, it is said, race mixture produces offspring who, from the point of view of the more advanced race, represent a step backwards. Similar ideas lie behind the hypothesis that race mixture inevitably leads to degeneration.

In fact, however, all reliable data we have concerning man's evolution indicate that the differentiation of races has taken place rather simultaneously. In comparison with the anthropoid apes, all human races display a very pronounced differentiation. As *Shapiro* [1953] points out, the advocates of the higher degree of development of the White race should perhaps hesitate to use the above-mentioned arguments of evolutionary differences considering, e.g., that the thick lips and the frizzy hair of the Negroes are more "evolved" from the simian level than the corresponding traits of the White race. Every race has been adapted to its environment, and the history of human evolution as we know it does not support any attempt at a hierachic subdivision of human races now living. The argument concerning mental differences, when scrutinized, appears more cultural than biologic. Regardless of the fact that statements concerning racial mental superiority sometimes have been based on the results of psychometric tests, the way in which the genetics of mental traits are treated is so careless that the statements must be rejected. Today most geneticists and psychologists agree that psychometric tests on the whole measure phenotypic intelligence, although there is undoubtedly a significant genetic component. So far the available tests can give some information about the genetic variation within a certain population, but they cannot be used for purposes of comparing populations with a quite different cultural background. Consequently,

we have no proof that there are any important differences in regard to genetic intelligence between different human races. Although there are as yet no proofs, it is quite conceivable that some mental differences do have a significant genetic background. The problem is, therefore, not one to be dismissed.

Besides the fact that evaluations which ascribe superiority to certain races are unscientific and disgraceful, available biologic and evolutionary facts leave no reason for keeping any discrimination between races or race mixtures. All scientists agree that all the human races now living belong to the same species. The differences between races represent differentiations and adaptations of each race to its special environment. Genetically, the races are populations with partly dissimilar gene pools. The genetic differences, however, do not seem to concern fundamental human traits but rather adaptive variations. Race mixture, therefore, can be expected to give offspring who display either maladaptation to the parental environment or a better adaptation. As always in a crossing between individuals who are different in regard to a large number of genes, the first generation will be intermediary, and subsequent generations will display a very considerable variation. Race crossings, therefore, tend to increase the genetic variation and thus provide extra raw material for selection and evolution. It should also be pointed out that in all natural populations of plants or animals selection seems to favour heterozygotes. A number of recent investigations seem to show that, in general, heterozygotes display a better viability (i.e. heterosis). This is probably a general phenomenon which is also valid for man. A more pronounced and new type of heterozygosity can be expected to result from race crossing. It is to be anticipated that this, at least sometimes, would imply adaptively advantageous results. In an investigation of about 300 descendants of Hottentots and Dutch or German farmers Fischer [1913] found an increased height in comparison with both parental groups. The general viability in this mixed population was judged as excellent. Mortality was low and the fertility with an average of 7.7 children per marriage was at any rate higher than for the White parental group. It seems probable that these results to some extent were due to a heterosis effect.

#### *Investigations of race crossings.*

Considering the importance of race crossing from a social and political point of view, it is surprising how very few actual investi-

gations we have in this field. The available investigations which are unbiased as well as scientifically acceptable certainly do not support any of the quasi-scientific writings, a great number of which has been offered to the public, and which more or less openly defend discrimination and superseded views. *Fischer's* above-mentioned study did not disclose any signs of degeneration or disadvantages. In general, most differences in comparison with the parental groups could easily be explained as due to different environment or a different culture.

The story of Pitcairn (cf. *Shapiro* [1936]) gives another example of race crossing without any resulting disadvantage. After the mutiny on the Bounty this island of Polynesia was colonized in 1790 by some dozen English sailors, Tahitian men and women. The population originating from these people now amounts to some 1,000 individuals, of whom only about half live on the original island. As an example of race mixture this population is quite unique because, due to a very long complete isolation, it has been free from all the different kinds of taboos which otherwise make life quite complicated for mixed groups. Nobody who has examined or contacted this population has been able to find any signs of disadvantageous effects of race mixture. On the contrary, these people display a very fine adaptation to their environment and, in spite of the isolation, they developed a high cultural standard with some original components.

The only actual investigation commonly cited by the opponents of race mixture is *Davenport's* work of 1929, "Race Crossing in Jamaica". By and large, this is a report of race differences between Whites and West Africans and of the quality of the offspring of such mixed marriages. The offspring, or the Mulattoes, are claimed to be physically as well as mentally inferior to both parental groups. *Davenport* was of the opinion that this was mainly due to disharmonic gene combinations. This work was recently scrutinized and criticized by *Shapiro* [1953], who seriously questioned or rejected most of *Davenport's* statements. *Shapiro* has shown that the data do not meet reasonable requirements of representativity. Sweeping generalisations have repeatedly been based on scanty observations. When the comparisons of the psychometric test scores of the offspring and the parental groups have been corrected, there remains the result that the Mulattoes do not deviate appreciably from the Negro population but score less than the Whites. This is in agreement with findings in the USA. However, it must be remembered that Mulattoes and

Negroes belong to the same social stratum. Therefore, it is probable that differences in environment are most important. No less important is the fact that there have been repeated re-mixtures between Mulattoes and Negroes but not—or very insignificantly—with the Whites. Biologically the Mulatto population was, in other words, not intermediary but closer to the original Negro population. Furthermore, one should not ascribe too much importance to means. The variability within groups was considerably greater than that between them.

Summing up our present knowledge of race crossings, i.e. knowledge backed up by facts, I think the correct conclusion would be that no proofs have been produced to the effect that such crossings are necessarily disadvantageous from a biologic point of view.

Some of the difficulties of race research are due to the fact that the relation of most classical anthropologic traits as hair, skin and eye colour, stature and all different kinds of somatic indices to their genetic background is not sufficiently known. Many such characteristics appear genetically too complex to serve other than purely descriptive purposes. Therefore, new pathways have been explored and especially the blood group research has exerted a great influence on physical anthropology during the last few years. In many cases it has been possible to demonstrate marked differences of gene frequencies of different blood group alleles. Recently Glass [1953] has suggested a method to calculate by means of such allele frequencies the magnitude of race crossings and the speed by which a nation in which race crossings occur is transferred into a more homogeneous population. The method is certainly rather crude and based on premises some of which are rather dubious, but on the whole it should give a good estimate of some features of race dynamics. As an example it could be mentioned that the blood group Rh<sub>0</sub> (cDe) has a frequency of 2–3 per cent among US Whites. Among US Negroes the frequency is 45 per cent and for Negroes from West Africa 65 per cent. The intermediary frequency for US Negroes agrees rather well with what could be expected after the race mixture that has occurred in the US since 1650. Glass calculated that the Negro population in the US has probably received about 30 per cent of its gene pool from the Whites through race mixture. The movement in the opposite direction has been rather insignificant. As this process proceeds, for every generation an increasing number of "Negroes" will pass the colour line and disappear into the White population, until finally the Negro in the

USA virtually disappears. It was estimated that this process would take some one thousand years.

In retrospect of everything said and written about races and race mixture I think one is justified to state that much of it, perhaps the most, represents desk speculations or pure superstition. Modern genetics and biology has shown that human variation whether within or between populations or races, has to be accepted as a fact due to the forces of human evolution. Crossings over the usual borders is a consequence of technical developments and world-wide social progress. It has also to be accepted that there is no reason to consider race mixture as a price to pay for these developments, as no harmful biologic effects resulting from it have been demonstrated. The harmful effects of race crossings and the problem itself is *not* created by nature but by man and it can only be removed by man.

#### *Summary.*

A short survey of the social and biologic implications of race crossing in man. There are few actual investigations on the effect of race mixture which can be considered to meet the requirements of objectivity and freedom of methodologic biases. Acceptable data do not justify the conclusion that, from a biologic viewpoint, race mixture is disadvantageous or undesirable. The race problem appears very much to be a man-made problem, created by personal idiosyncrasies and political biases.

#### *Résumé.*

L'auteur donne un aperçu de ce qu'implique chez l'homme d'un point de vue social et biologique le croisement de races différentes. Il y a peu d'investigations faites actuellement sur l'effet d'un croisement de races qu'on puisse considérer comme satisfaisant les exigences de l'objectivité et l'absence d'idées préconçues. Des données plausibles ne permettent pas de conclure que le croisement de races serait défavorable ou indésirable d'un point de vue biologique. Il semble que le problème de races soit en grande partie un problème créé par les hommes par suite d'idiosyncrasies personnelles et de préjugés politiques.

#### *Zusammenfassung.*

Eine kurze Übersicht der sozialen und biologischen Folgen der Rassenkreuzung beim Menschen. Zurzeit gibt es nur wenige Unter-

suchungen über die Wirkungen der Rassenmischung, welche den Forderungen der Objektivität und des Freiseins von systematischen Vorurteilen Genüge leisten. Anerkannte Ergebnisse rechtfertigen nicht den Schlußsatz, daß Raasenmischung von einem biologischen Gesichtspunkt aus schädlich oder nicht wünschenswert wäre. Das Rassenproblem scheint in hohem Maße ein menschliches Erzeugnis zu sein, hervorgerufen durch persönliche Idiosynkrasien und politische Vorurteile.

#### LITERATURE

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## THE EPIDEMIOLOGY OF DEAFNESS DUE TO MATERNAL RUBELLA

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### 1. Introductory.

A general review of maternal rubella as a cause of congenital anomalies has been given by Aycock and Ingalls [1946]. It is proposed to give here a more limited account of the incidence of congenital deafness throughout the world with the aid of census and institutional data, in order to stress the importance of isolation in producing large proportions of susceptible adult females. The experiences of Australia, New Zealand and Iceland are contrasted with those of Italy, Sweden, England and the United States.